

receiving at the first location region information separate from the compressed image from the remote view station at the first location, wherein the region information defines a region of the displayed medical image; and

locally applying an image processing operation at the image server to a region of the source medical image as a function of the region information.

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

Upon entry of this amendment, claims 1-20 and 23-30, as amended, will remain in the application.

Section 112 rejections

Claims 5, 12, and 18 were rejected under 35 U.S.C. 112, first paragraph. The Action states that the meaning of the word "score" is vague and indefinite.

A "score," as used in the application, is a result, e.g., a scaled number (See page 2, ll. 10-12), derived by image analysis on a selected region of an image which may be predictive of something, for example, a disease such as cancer. The score may be based on one or more factors determined through the image analysis operation(s), including, for example, the density of pixels of a certain color, the ratio of pixels of different colors, or the complexity of a shape in the selected region.

Claims 1 and 23 were rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite.

Regarding claim 1, the Action is correct in assuming that the compressed image is decompressed at the remote view station when displayed, which finds support at page 4, lines 28-29.

Regarding claim 23, the interpretation of "compression level" in the Action is correct. Claim 23 has been amended to indicate that compression at the second compression level results in less information loss than compression at the first compression level.

Section 103 rejections

Claims 1-4, 6-11, 13-17, and 19-30 were rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Wood et al. (US 5,851,186) and Bamberger et al. (US 5,854,851).

Applicant teaches selecting a region on a displayed image generated from a compressed image file, transmitting (separate from the compressed image file) region information identifying the selected region to an image server, and performing image analysis operations on an uncompressed source image file. Performing the image analysis on the uncompressed source image may produce more accurate results than performing image analysis on the compressed image file because, although the displayed image generated from the compressed image file may appear to the human eye to contain the same information as the uncompressed source image, information may be lost during compression, and this loss may affect the results of the image analysis.

The Action states that Bamberger et al. teach:

"selecting a region of the displayed medical image; and applying image analysis operation to a region of the compressed medical image (emphasis added)"

However, nowhere in the Bamberger reference is any of the terms "compression," "compressed," "compress," or even compression standards such as "JPEG" or "GIF," mentioned. Accordingly, Applicant submits that Bamberger et al. do not teach "applying image analysis operation to a region of the

compressed medical image." Rather, Bamberger et al. disclose identifying a region and performing image processing on the same uncompressed image at the same physical location.

Wood et al. disclose using the graphics features of a word processing program used to generate a report, which includes an embedded image, to mark areas on the image, but merely for the convenience of human reviewers (col. 10, ll. 35-45). Wood et al. do not disclose performing image processing operations on the marked regions.

Consider exemplary claim 1, as amended, which recites in relevant part:

"...selecting a region of the compressed medical image at the second location; and

applying image analysis operations to a region of the source medical image at the first location corresponding to the selected region of the compressed medical image."

Neither Wood et al. nor Bamberger et al., either alone or in combination, teach or suggest selecting a region of a compressed medical image and applying image analysis to an uncompressed source medical image in response to that selection at a different location. Accordingly, Applicant submits that the independent claims, as amended, and their dependencies are allowable.

Also, consider exemplary claim 3, as amended, which recites in relevant part:

"...transmitting region information separate from the compressed medical image from the remote view station to an image server, wherein the region information defines the selected region of the displayed medial image."

Neither Wood et al. nor Bamberger et al., either alone or in combination, teach or suggest transmitting from a remote view station region information, e.g., pixels coordinates, corresponding to a selected region of the compressed medical image separate from the compressed medical image to an image server. Accordingly, Applicant submits that claim 3 and its dependency, claim 4, are allowable.

Claims 5, 12, and 18 were rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Wood et al. and Bamberger et al. in further view of Nishikawa et al. (US 6,058,322).

Claims 5, 12, and 18 depend from allowable independent claims 1, 10, and 15, respectively, and should be allowed therewith.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: _____

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Scott C. Harris
Reg. No. 32,030

Fish & Richardson P.C.
PTO Customer No. 20985
4350 La Jolla Village Drive, Suite 500
San Diego, California 92122
Telephone: (858) 678-5070
Facsimile: (858) 678-5099

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Version with markings to show changes made

In the Specification:

Please replace the paragraph beginning on page 4, line 26 with the following rewritten paragraph:

Based on the selection, image server 24 compresses medical images associated with the case and communicates the compressed images to remote view station 26 via network 20 (34). Remote view station 26 decompresses the images and displays the uncompressed images for review by the medical professional (36). The displayed image is not a pixel-by-pixel duplicate of the original source image stored on image server 24 because of data loss during compression. Several algorithms, however, are known that can achieve a compression ratio, such that the compressed image uses relatively low bandwidth, without significantly changing the visual representation of the image. Therefore, compressing the image can be effectively lossless with respect to human vision. For example, it has been found that both JPEG compression and fractal image compression, when set for [to] moderate compression, result in images suitable for transmission without resulting in data loss perceptible with human vision.

In the Claims:

Please cancel claims 21 and 22.

Amend claims 1, 3, 6, 10, 11, 15, 23, 26, and 27 as follows:

1. (Amended) A method comprising:
generating a compressed medical image from a source medical image at a first location;

transmitting the compressed medical image to a remote view station at a second location for display;

selecting a region of the [displayed] compressed medical image at the second location; and

applying image analysis operations to a region of the source medical image at the first location corresponding to the selected region of the compressed medical image.

3. (Amended) The method of claim 1 and further including transmitting region information separate from the compressed medical image from the remote view station to an image server, wherein the region information defines the selected region of the displayed medial image.

6. (Amended) The method of claim 1 and further including receiving a diagnosis at the first location from the remote view station and associating the diagnosis with the source medical image in a database at the first location.

10. (Amended) A system comprising:
an image server at a first location storing a source medical image;

a remote view station at a second location communicatively coupled to the image server to receive a compressed version of the source medical image, wherein the remote view station includes an input device for selecting a region of the compressed medical image, and further wherein the image server applies an image analysis operation on a region of the source medical image that corresponds to the selected region of the compressed medical image.

11. (Amended) The system of claim 10, wherein the remote view station transmits region information separate from the compressed medical image from the remote view station to the image server, wherein the region information includes a plurality of pixel coordinates outlining the selected region of the compressed image.

15. (Amended) A computer program, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

generate a compressed medical image from a source medical image at a first location;

transmit the compressed medical image to a remote view station at a second location for display;

receive at the first location region information from the remote view station, wherein the region information defines a region within the compressed medical image; and

apply image analysis operations to a region of the source medical image at the first location as a function of the region information.

23. (Amended) A method comprising:

compressing a source medical image at a first compression level at a first location;

transmitting the compressed medical image to a remote view station at a second location for display;

receiving at the first location region information separate from the compressed medical image from the remote view station, wherein the region information defines a region of the compressed medical image; and

compressing a region of the source medical image at a second compression level at the first location as a function of the region information, wherein the second compression level results in less information loss than the first compression level.

26. (Amended) The method of claim 23 and further including receiving at the first location a diagnosis from the remote view station and associating the diagnosis with the source medical image in a database at the first location.

27. (Amended) A method comprising:
transmitting a medical image from a first location to a remote view station at a second location for display;
receiving at the first location region information separate from the compressed image from the remote view station at the first location, wherein the region information defines a region of the displayed medical image; and
locally applying an image processing operation at the image server to a region of the source medical image as a function of the region information.